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PRE-APPEAL BRIEF REQUEST FOR REVIEW

Docket Number (Optional)
2100.013200

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to "Mail Stop AF, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450" [37 CFR 1.8(a)]

on August 14, 2008

Signature /Kathryn Danas/

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Application Number	Filed
09/873,706	June 4, 2001

First Named Inventor: SRIDHAR GOLLAMUDI

Art Unit	Examiner
2611	JASON M. PERILLA

Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.

This request is being filed with a notice of appeal.

The review is requested for the reason(s) stated on the attached sheet(s).
Note: No more than five (5) pages may be provided.

I am the

- ☐ applicant/inventor.
- ☐ assignee of record of the entire interest. See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96)
- ☑ attorney or agent of record. Registration number 52226
- ☐ attorney or agent acting under 37 CFR 1.34. Registration number if acting under 37 CFR 1.34 _____

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August 14, 2008
Date

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below*.

☐ *Total of _____ forms are submitted.

Claims 1-13 of the present application have been finally rejected under 35 U.S.C. § 103(a) as allegedly being obvious over Harrison (U.S. Patent No. 6,154,485) in view of Forssen (U.S. Patent No. 6,173,014). Applicants believe that the Examiner has erred in concluding that the pending claims are obvious over the prior art of record and have therefore submitted a Notice of Appeal. Applicants further request a pre-appeal brief conference because Applicants believe that the Examiner has erred in concluding that a person of ordinary skill in the art would have been motivated to combine the cited references to arrive at the subject matter set forth in the pending claims.

The capacity and data rate of existing code division multiple access (CDMA) systems can be increased by using multiple antennas at the transmitter. Downlink transmissions from an antenna array can be enhanced using either beamforming to provide array gain at a subscriber unit or orthogonal space-time coding to provide diversity gain to the mobile subscriber. However, neither approach is optimal in all conditions. For example, beamforming is typically considered desirable when the mobile station is moving at low speeds and space-time transmit diversity (or orthogonal transmission) is generally considered desirable when the mobile station is moving at relatively high speeds.

At least in part to address these shortcomings in the conventional practice, the pending claims set forth techniques for combining beamforming and space-time diversity

techniques. The pending claims set forth methods of determining relative amounts of orthogonal coding and beamforming used for *transmitting* signals from multiple first antennas to at least one second antenna. In particular, the pending claims set forth techniques that determine the relative amounts of orthogonal coding and beamforming for *transmission* by the first antennas using measures of the correlation between signals *received* at the first antennas.

Claim 1 sets forth determining at least one first coefficient based upon information indicative of at least two first signals received by the at least two first antennae. The first coefficient is indicative of at least one correlation between the first signals *received* by the antennae and the first signals are transmitted from the second antenna(e). The claimed method also includes determining at least one second coefficient based on the first coefficient. The second coefficient indicates weights applied to at least two second signals to be *transmitted* by the two or more antennae. The weights indicate relative amounts of orthogonal coding and beamforming to be used for transmitting the second signals. See, *e.g.*, Patent Application, page 6, line 18 – page 12, line 14 and Figures 1-2.

A finding of obviousness under 35 U.S.C. § 103 requires a determination of the scope and content of the prior art, the level of ordinary skill in the art, the differences between the claimed subject matter and the prior art, and whether the differences are such that the subject matter as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made. *Graham v. John Deere Co.*, 148 USPQ 459 (U.S. S.Ct. 1966). To determine whether the subject matter as a whole would have been

obvious to one of ordinary skill in the art at the time the invention was made, one should determine whether the prior art reference (or references when combined) teach or suggest all the claim limitations. Furthermore, it is necessary for the Examiner to identify the reason why a person of ordinary skill in the art would have combined the prior art references in the manner set forth in the claims.

Harrison is concerned with transmitting and receiving signals using combined orthogonal transmit diversity and adaptive array techniques. Harrison describes a coefficient α that may be used to calculate adaptive array filter weights 90 and 92, which may be used by an adaptive array processor 76 to allow a base transmitter to transition between an orthogonal transmit diversity mode and an adaptive array mode in proportion to degradation in the quality of feedback data provided over the uplink. This transition may allow the base transmitter to disable the adaptive array mode in proportion to the degradation of the quality of feedback data from a receiver. See Harrison, col. 8, ll. 23-35.

Forssen describes estimating the correlation of impairments associated with the signals received at different antennas. The impairment of a signal is defined as the combination of the interference plus the noise in a signal received at an antenna. The impairment of signals provided by a single source that travel along different paths and are received at two closely spaced antennas should be correlated, so estimates of the impairment correlation may permit the interference and the noise in a signal to be estimated and removed from the *received* signal. See Forssen, col. 4, ll. 37-56. For

example, a branch metric processor 550 may use estimates of the impairment correlation properties to improve branch metric formulations. See Forssen, col. 7, ll. 12-25.

The Examiner argues that a person of ordinary skill in the art would have been motivated to combine the subject matter in Harrison and Forssen so that the correlations of impairment properties between signals received by multiple antennas could be used to aid in the transmission of signals by these antennas. Applicants respectfully disagree and submit that the Examiner has erred in concluding that a person of ordinary skill in the art would have been motivated to combine the subject matter in the cited reference in the manner suggested by the Examiner.

Applicants respectfully submit that there is no teaching in the prior art of record that estimates of the impairment have any relationship to the relative desirability of beamforming and orthogonal transmission. To the contrary, the prior art of record teaches that the impairment is only used for processing *received* signals. For example, Forssen teaches that estimates of the impairment (*i.e.*, the interference plus noise) can be used to improve detected symbol hypotheses using interference rejection combining techniques. By removing the interference in this manner, the effect of fading dips can be reduced, particularly in systems that are interference limited. See Forssen, col. 4, ll. 37-56. Thus, Applicants respectfully submit that Forssen only teaches that the estimates of the impairment should be used to process the received signal. Accordingly, Applicants respectfully submit that a person of ordinary skill in the art would not have been motivated to use estimates of the impairment (or correlations between impairments

generated along different signal paths) to control the use of beamforming and orthogonal *transmission*.

Applicants further submit that the only teaching for the entirety of the subject matter set forth in the pending claims is found in the present application. Applicants therefore respectfully submit that the Examiner has used the current application as a roadmap for combining disparate elements in the prior art, which is an impermissible use of hindsight reasoning.

For at least the aforementioned reasons, Applicants respectfully submit that the Examiner has failed to make a *prima facie* case that the pending claims are obvious over the cited references. Applicants respectfully request that the Examiner's rejections of claims 1-13 under 35 U.S.C. § 103(a) be REVERSED.